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LETTER TO THE EDITOR

Male circumcision is not associated with an increased prevalence of erectile dysfunction

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Dear Editor,

The impact of circumcision on erectile function and sexual satisfaction is currently controversially discussed. Recently, Bronselaer *et al.*¹ reported on a study based on an online survey including 1059 (77.4%) uncircumcised and 310 (22.6%) circumcised men. They found a significantly higher sexual pleasure at all aspects of the glans penis and higher orgasm intensity at the lateral and dorsal sides of the glans in uncircumcised men. There was also a trend for higher orgasm intensity at the ventral side of the glans penis although statistical significance was not reached. Bronselaer *et al.*¹ concluded that their study would confirm the importance of the foreskin for penile sensitivity, overall sexual satisfaction and penile function.

To our opinion, these results should be interpreted with caution, since Bronselaer *et al.*¹ contrariwise to their findings concerning the glans penis could not confirm a deterioration of sexual pleasure and orgasm intensity at the ventral penile shaft in circumcised men. In contrast, sexual pleasure in this location was slightly (albeit not significantly) improved and orgasm intensity was significantly higher in circumcised men. It is known, that the ventral aspect of the penis, namely the frenulum, represents the most sensitive area which therefore constitutes the most important region for sexual stimulation.² Hence, it remains unclear how these conflicting region-divided results can be translated into overall penile sensitivity and overall sexual satisfaction. Penile functioning and erectile function in detail has not been addressed by this online survey and conclusions in this regard should therefore be drawn very cautiously, particularly as other studies have shown contradictory results in this regard.

We recently published results of a survey which may also contribute to this debate.³ A total of 10 000 men (residence city Cottbus, Germany) were provided with a questionnaire containing 35 items including the International Index of Erectile Function (IIEF)-6, which is the only validated instrument for assessment of erectile dysfunction (ED).⁴ In addition, sociodemographic factors, life style, sexual satisfaction, comorbidity and previous surgical treatment including circumcision were assessed. Two thousand four hundred and ninety-nine men (age: 18–79 years) living in a heterosexual partnership completed the questionnaire and represented the final study group.

Two study endpoints (SEP) were established: minor to severe ED defined as IIEF-6 ≤ 25 (SEP1) and moderate to severe ED defined as

IIEF-6 ≤ 21 (SEP2). One hundred and sixty-seven (6.7%) men had undergone circumcision, while 2332 (93.3%) had not. Mean age was significantly different in both groups (41 in men with and 52 years in men without circumcision, $P < 0.001$), while no other statistically significant differences in baseline characteristics were observed between the two groups.

Minor to severe ED (SEP1) was present in 40.1% of the whole cohort, moderate to severe ED (SEP2) in 27.8%. Based on multivariate regression analysis; age, history of smoking, hypertension, diabetes, chronic ischemic heart disease, peripheral arterial obstructive disease, cirrhosis of the liver and history of pelvic surgery were found to have an independent influence on the presence of ED regarding both SEPs. In contrast, a status after circumcision did not show an independent influence on either study endpoints (SEP1: OR 1.36, $P = 0.174$ and SEP2: OR 1.42, $P = 0.175$). Interestingly, satisfaction with the rigidity of erection was even higher in patients after circumcision ($P = 0.022$), while no other significant correlation between sexual satisfaction of men and a history of circumcision could be assessed (Table 1).

Summarizing the results of our study which represents the largest survey worldwide on male ED using the IIEF as a validated instrument, we could not confirm that the prevalence of ED is increased in men following circumcision. Sexual satisfaction of men in this study was independent of presence of the prepuce.

Table 1: Spearman correlation of single-item measures of sexual satisfaction with status of circumcision (direction: without circumcision, circumcision)

Items concerning sexual satisfaction	Rho (ρ)	P
How much did you enjoy sexual intercourse during the past 4 weeks?	+0.036	0.076
Generally, how satisfied have you been with your sexual life during the past 4 weeks?	–0.003	0.880
How satisfied have you been with the sexual relationship with your partner during the past 4 weeks?	+0.002	0.933
How satisfied have you been with the rigidity of your erection during the past 4 weeks?	–0.046	0.022
Have you been worried about the rigidity of your erection during the past 4 weeks?	+0.029	0.147
Have you been worried to burden your relationship due to too weak erections during the last 4 weeks?	+0.008	0.700
During the past 4 weeks, have you felt less than a man due to weak erection?	+0.013	0.535
Generally, would you wish to have a better sexual life?	–0.016	0.426

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As most other studies on this topic including the one of Bronselaer *et al.*¹ our study is limited by the retrospective and survey nature of the study as well as by the fact that reasons for indication for circumcision were not addressed which might further influence results and constrain interpretability of data. Different age distribution in both of our study groups may give some cause for concern, especially, as age has been shown to be the most important risk factor for the development of ED, but results were therefore age-adjusted in multivariate analysis. Another drawback of our study could be the small percentage of circumcised men in the study cohort which might not be representative, but prevalence data on circumcision status in the local population are lacking. However, in a similar study from Denmark with 1996 evaluable men published by Frisch *et al.*,⁵ a comparable proportion of men who had undergone circumcision (5.3%) were found. In this study again, no differences concerning overall sexual function, premature ejaculation and prevalence of ED between men with and without circumcision could be observed. On the other hand, circumcised men had statistically significant more orgasm difficulties in this study.

In principle, it has to be noted that the only reliable way to evaluate the influence of circumcision on sexual function is to address the same person before and after adult circumcision, which was not possible in our study. There are only two trials conducted in Africa with an appropriate study design in this regard. Although ED was not the primary endpoint in these studies, again, no impact of circumcision on ED could have been observed.^{6,7}

In conclusion, although no impact of circumcision on erectile function and sexual satisfaction has been found in a number of studies, available data remain conflicting. This requires careful counseling of patients prior to circumcision.

AUTHOR CONTRIBUTIONS

IW, MM and SBM were responsible for the concept and framework of the letter. MM and BH participated in collecting the data. MM and

SBM participated in evaluating the data. IW, MM and SBM wrote the paper. IW, MM, BH and SBM were responsible for the final editing. BH supervised the study. All authors read the manuscript and have given final approval of the version to be published.

COMPETING INTERESTS

The authors declare that they have no competing interests.

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